

	Search Text	DBs	Time Stamp
18	carborundum and rubber	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:53
19	((carborundum and rubber) and tire	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:53
20	((carborundum and rubber) and tire) and tread	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:01
21	(524/493).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:02
22	(524/492).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:03
23	(524/496).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:04
24	(524/495).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:04
25	(524/430).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:05
26	(524/438).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:06
27	(rubber and (silicon adj carbide)) and tire	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:06
28	("6121346").PN.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:06
29	((("6121346").PN.) and (silicon adj carbide)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 14:07
30	tacktene near3 (vinyl)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/21 09:17

	Search Text	DBs	Time Stamp
1	tire and tread and ((silicon adj carbide) near10 (BET and (particle adj size)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/21 09:17
2	tire and ((silicon adj carbide) near10 (BET and (particle adj size)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:26
3	((silicon adj carbide) near10 (BET and (particle adj size)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:27
4	rubber and (silicon adj carbide)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:27
5	silicon carbide and BET and particle size	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:28
6	silicon carbide and BET and (particle adj size)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:28
7	(silicon adj carbide) and BET and (particle adj size)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:28
8	(silicon adj carbide) same (BET and (particle adj size))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:33
9	wyrozebski and (silicon adj carbide)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:34
10	wyrozebski	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:34
11	((silicon adj carbide) same (BET and (particle adj size))) and rubber	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:34
12	wyrozebski and (silicon adj carbide)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:36
13	rubber and (silicon adj carbide)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:36
14	(rubber and (silicon adj carbide)) and tire	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:36
15	((rubber and (silicon adj carbide)) and tire) and tread	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:44
16	carborundum	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:53
17	SiC adj PT8026J	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/11/20 13:53

NanoProducts

THE BUILDING BLOCKS OF INNOVATION™

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INTRODUCTION

↓	INTRODUCTION TO NANOTECHNOLOGY	PRINT THIS PAGE 
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The nanotechnology industry can be broadly defined as companies focusing on emerging technology to develop and manufacture precision products at the atomic, molecular or macromolecular levels (e.g., approximately 1 - 100 nanometers in size, with each nanometer being equal to one billionth of a meter). Current research and development and commercialization efforts range from providing a fundamental understanding of the phenomena materials exhibit at the nanoscale range, to creating and using structures, devices and systems that have novel properties and functions as a result of their sub-100 nanometer size. [Click here](#) to see an animated demonstration of the size of nanoscale materials.

Nanotechnology involves integrating and is inviting cooperative multidisciplinary work. Major efforts include nano-electronics, which aims to develop active circuits and chips from molecular building blocks, nano-biotechnology, which aims to develop medicines, markers, and devices from molecular level engineering and nano-materials, which aims to develop precision engineered nanoscale materials for a wide range of industries.

NanoProducts Corporation focuses on materials nanotechnology. We work on developing and applying nanoscale building blocks for performance-enhanced products. In other words, our goal is to significantly enhance the productivity and profitability by delivering nano-engineered forms of materials used in products and processes.

Duradene A.O.		Bound Styrene	Block Styrene	Vinyl Tg	Base ML/4	OE ML/4	Oil PHR	Oil Type	Specific Gravity
706	N.S.	23.5	<2	11 - 62	55	--	0	--	0.93
707*	N.S.	23.5	<1	11 - 62	45	--	0	--	0.93
711	S.S.	18.0	<1	11 - 70	70	--	0	--	0.93
715	S.S.	23.5	<1	46 - 39	60	--	0	--	0.94
750	S.	18.0	<1	11 - 70	103	45	37.5	ARO.	0.94
751	S.	25.0	<1	11 - 60	110	45	37.5	ARO.	0.95
753	S.	33.0	<1	13 - 50	145	74	20.0	ARO.	0.95
756	S.	33.5	<1	30 - 39	125	57	37.5	ARO.	0.95
758	N.S.	25.0	<1	11 - 60	103	45	37.5	NAP.	0.94
762	S.	40.0	<1	36 - 27	140	63	37.5	ARO.	0.96

**Not currently in production*

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Taktene® (Tire Products)

Butadiene rubber(BR)

Properties:

- Provided that the compounds are formulated and processed correctly, the vulcanizates have good resistance to aging, reversion, abrasion and flex cracking, good low temperature flexibility and high resilience.

Applications:

- Tires, conveyor belting, caterpillar tread blocks, footwear soles, V-belts; blended with NR for goods having thick sections and needing high resistance to reversion, e.g. buffers, roll covers needing high abrasion resistance; seals, profiles and other goods, particularly those produced by injection molding

Food contact:

Product	Catalyst	Cis-1,4 content (%)	Oil content (wt %)	Mooney viscosity (ML (1+4) 100°C)	Remarks
▼ Masterbatch with 77 pbw N 234 black					
Taktene® 1359	cobalt	> 96	23 +/- 2	59 +/- 7*	*Different measuring method: MS (1+4) 100°C
▼ Standard grades					
Taktene® 1203	cobalt	> 96	-	43 +/- 5	
Taktene® 1203-G1	cobalt	> 96	-	43 +/- 5	
Taktene® 1220	cobalt	> 96	-	41 +/- 5	
Taktene® 220	cobalt	> 96	-	40 +/- 5	
Taktene® 221	cobalt	> 96	-	53 +/- 5	
Taktene® 4510	lithium	38	-	45 +/- 5	
Taktene® 5510	lithium	38	-	53 +/- 6	

Product Specification

Fibers, Additives and
Rubber Division

Rubber

TAKTENE 1203*

Product Description

A highly linear, low Mooney viscosity, non-staining, solution polymerized, high cis-1,4-polybutadiene rubber.

Raw Polymer Properties

Property	Range	Test Method
Mooney viscosity		
ML 1+4(100°C)	43 ± 5	ASTM D 1646
Volatile matter (wt %)	0.7 max.	ASTM D 5668

Cure ⁽¹⁾⁽²⁾ Characteristics

Property	Range	Test Method
Minimum torque		
ML (dN.m)	3.7 ± 1.0	ASTM D 5289
(lbf.in)	3.3 ± 0.9	ASTM D 5289
Maximum torque		
MH (dN.m)	20.4 ± 3.0	ASTM D 5289
(lbf.in)	18.1 ± 2.7	ASTM D 5289
tS1 (minutes)	2.3 ± 1.2	ASTM D 5289
t'50 (minutes)	7.8 ± 1.3	ASTM D 5289
t'90 (minutes)	11.7 ± 2.1	ASTM D 5289

Other Product Features

Property	Typical Value
Specific gravity	0.91
Stabilizer type	Non-staining

(1) MDR Rheometer at 160°C, ±0.5 degree arc, 30 minutes running time, no preheat

(2) Cure characteristics determined on the following MIM mixed compound:

TAKTENE 1203	100	(parts by mass)
Zinc oxide	3	
Stearic acid	2	
IRB #7 black (N330)	60	
Naphthenic oil	15	
TBBS	0.9	
Sulfur	1.5	

* This specification refers to product manufactured by Bayer Inc.,
Sarnia, Ontario, Canada.

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Previous Issue: January 1, 1999

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